

REMARKS

The rejections under 35 U.S.C. § 102(b) as anticipated by and under 35 U.S.C. § 103(a) as unpatentable over:

U.S. 5,533,678 (Strauch et al) of Claims 1, 5-9, 14-18, and 35-44, and  
U.S. 5,896,904 (Ozaki et al) of Claims 1-9, 15-18, and 35-44,  
are respectfully traversed.

**Submitted herewith** are comparative data between products according to the present invention, labeled as Product 1 through Product 4(2), and commercial products outside the terms of the present claims, with regard to rheological properties at various shear rates at 24 hour, 7 days, and 30 days duration. The data show that the products according to the present invention generally produced the lowest viscosity, especially at a shear rate of  $300 \text{ s}^{-1}$ .

Applicants intend to file a declaration under 37 CFR 1.132 in support of the above-discussed data.

Applicants have thus shown, both in the comparative data in the specification, and the above-discussed newly-submitted data, that when 50-100% of a precipitated calcium carbonate present in a polyvinylchloride-based plastisol is replaced with a rheology regulator of the present claims, i.e., one comprising a natural calcium carbonate, crushed to a degree of fineness, with a specific surface area of around  $14\text{-}30 \text{ m}^2/\text{g}$ , measured according to the BET method to ISO 4652, the viscosity is reduced. The data show both the significance of using a natural calcium carbonate, as opposed to a synthetic calcium carbonate, and a natural calcium carbonate having a specific surface area meeting the presently-recited range limitation.

Strauch et al discloses a method for the production of natural and/or synthetic carbonates, and more particularly calcium carbonates, with a high  $\text{BET}/\text{N}_2$  specific surface area of over  $20 \text{ m}^2/\text{g}$ , and more particularly of between  $20\text{-}50 \text{ m}^2/\text{g}$  (column 2, lines 3-6), wherein the BET is measured by German standard DIN 66132 (column 2, lines 53-54).

Ozaki et al discloses a tire having low rolling resistance made of a composition comprising a rubber component and optionally, a surface-treated calcium carbonate having a surface area by nitrogen adsorption of  $15 \text{ m}^2/\text{g}$  or more (column 2, lines 53-55). However, like Strauch et al, it is not clear what the relationship is between the presently-recited BET method of ISO 4652.

Neither Strauch et al nor Ozaki et al anticipates or otherwise renders the presently-claimed invention unpatentable. First of all, it is not clear what the relationship is between the presently-recited BET method of ISO 4652, and the German standard DIN 66132 disclosed by Strauch et al or the nitrogen adsorption method of Ozaki et al. The burden is on the Examiner to establish the relationship, if any. In addition, neither Strauch et al nor Ozaki et al distinguishes between natural and synthetic carbonates, and therefore could not have predicted the superior results obtained using the presently-claimed natural calcium carbonate-based rheology regulator when used in a polyvinylchloride-based plastisol.

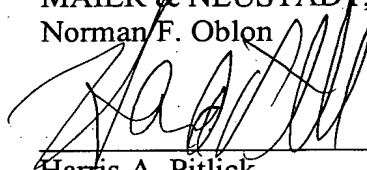
With regard to Claim 9, the Examiner assumes that oil absorption is a function of specific surface area. In other words, the Examiner finds that if two materials have the same specific surface area, the materials would be expected to have the same oil absorption. In reply, while Applicants have argued above that the respective specific surface areas of the presently-claimed rheology regulator, on the one hand, and Strauch et al and Ozaki et al, on the other hand, have not been shown to be the same or overlapping, the Examiner's finding of a correlation between specific surface area and oil absorption is not based on any evidence of record. Indeed, oil absorption is dependent on whether chemical additives are used or not during preparation or during milling, and would also depend on the nature of the chemical additive when used. For example, the nature of a dispersing agent used will affect the oil absorption.

For all the above reasons, it is respectfully requested that the rejections over the prior art be withdrawn.

All of the presently-pending, active claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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MAIER & NEUSTADT, P.C.  
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A handwritten signature in black ink, appearing to read 'Harris A. Pitlick', is written over a horizontal line.

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FOK 2553/III  
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table 1

# Omya AG CALCIUM CARBONATE PRODUCT in PVC plastisol for automobile undersealing

formulation	1		2		3		4		5	
Vestolit E 7031	33,0		33,0		33,0		33,0		33,0	
DINP	40,5		40,5		40,5		40,5		40,5	
Weisskalk Super 40	2,0		2,0		2,0		2,0		2,0	
EURETEK 505	1,0		1,0		1,0		1,0		1,0	
Ingaslab BZ 529	1,0		1,0		1,0		1,0		1,0	
Winnofill SPT (FOK)	22,5									
Socal 312 (FOK)			22,5							
Winnofill SPT (COATEX)					22,5					
Socal 312 (COATEX)							22,5			
Product 1										22,5

## RHEOLOGICAL PROPERTIES (Rheomat 120, MS DIN 125, 23°C, descending ramp)

shear rate	Winnofill SPT (FOK)				Socal 312 (FOK)				Winnofill SPT (COATEX)				Socal 312 (COATEX)				Product 1			
	24 h	7 days	30 days	24 h	7 days	30 days	24 h	7 days	30 days	24 h	7 days	30 days	24 h	7 days	30 days	24 h	7 days	30 days	24 h	7 days
20 s-1	173	194	173	245	193	177	144	160	161	302	193	218	162	135	1					
40 s-1	254	303	280	330	295	280	218	280	288	391	291	333	240	223	2					
60 s-1	330	399	378	411	389	388	287	361	358	473	381	441	306	289	3					
80 s-1	396	507	462	490	483	447	358	449	451	550	451	541	371	372	4					
100 s-1	465	600	553	570	588	528	416	547	587	637	537	657	440	446	5					
120 s-1	532	701	623	645	668	597	482	636	674	705	628	722	492	517	5					
140 s-1	586	788	727	718	748	671	542	720	768	787	738	830	550	588	6					
160 s-1	637	892	837	790	836	773	609	810	866	877	829	926	609	651	7					
180 s-1	708	967	903	885	916	865	656	887	947	1009	925	1015	663	717	7					
200 s-1	795	1054	1021	988	995	936	715	977	1033	1139	1029	1110	722	775	8					
220 s-1	846	1148	1112	1093	1078	1039	781	1054	1124	1270	1092	1237	771	847	8					
240 s-1	971	1233	1227	1158	1146	1109	816	1140	1206	1368	1167	1301	844	937	10					
260 s-1	993	1351	1239	1255	1238	1229	900	1224	1300	1441	1271	1384	878	991	11					
280 s-1	1074	1423	1321	1348	1325	1281	957	1303	1390	1570	1357	1500	938	1086	12					
300 s-1	1168	1529	1544	1392	1402	1344	1035	1383	1466	1622	1483	1629	985	1143	12					
Yield point Bingham	Pa	111	123	88	152	137	105	102	88	161	100	135	134	85						
adhesion 30 min/130°C																				



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table 2

**Omya AG CALCIUM CARBONATE PRODUCT in PVC plastisol for automobile undersealing**

formulation	6		7		8		9		10
Vestolit E 7031	33,0		33,0		33,0		33,0		
DINP	40,5		40,5		40,5		40,5		
Weisskalk Super 40	2,0		2,0		2,0		2,0		
EURETEK 505	1,0		1,0		1,0		1,0		
Irgastab BZ 529	1,0		1,0		1,0		1,0		
Product 2	22,5								
Product 3			22,5						
Product 4(1)					22,5				
Product 4(2)							22,5		

**RHEOLOGICAL PROPERTIES (Rheomat 120, MS DIN 125, 23°C, descending ramp)**

shear rate	Product 2				Product 3				Product 4(1)				Product 4(2)			
	24 h	7 days	30 days	24 h	7 days	30 days	24 h	7 days	30 days	24 h	7 days	30 days	24 h	7 days	30 days	24 h
20 s-1	167	156	180	168	182	194	157	164	172	156	169	180				
40 s-1	238	236	279	245	274	281	236	253	268	227	260	283				
60 s-1	302	303	362	311	355	360	303	331	351	292	342	373				
80 s-1	358	368	436	371	432	439	365	407	431	353	422	460				
100 s-1	412	428	521	440	497	520	435	472	501	412	494	539				
120 s-1	460	497	582	496	568	591	487	547	576	467	563	609				
140 s-1	510	555	651	550	634	661	547	614	650	523	626	685				
160 s-1	556	611	722	609	702	715	607	685	717	583	702	759				
180 s-1	602	663	783	658	775	790	663	741	777	640	768	826				
200 s-1	682	709	869	707	839	870	724	802	848	689	836	909				
220 s-1	737	758	920	772	880	920	771	865	900	738	902	978				
240 s-1	802	851	1009	824	960	974	818	930	984	782	965	1046				
260 s-1	856	913	1065	876	1017	1042	891	988	1035	837	1029	1133				
280 s-1	910	974	1154	943	1074	1105	936	1082	1091	889	1087	1191				
300 s-1	958	1029	1206	985	1130	1181	984	1131	1153	933	1139	1272				
Yield point Bingham	124	117	141	138	154	159	131	125	147	129	137	142				
adhesion 30 min/130°C																

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diagram 1

**CALCIUM CARBONATE PRODUCT in PVC plastisol for automobile undersealing**

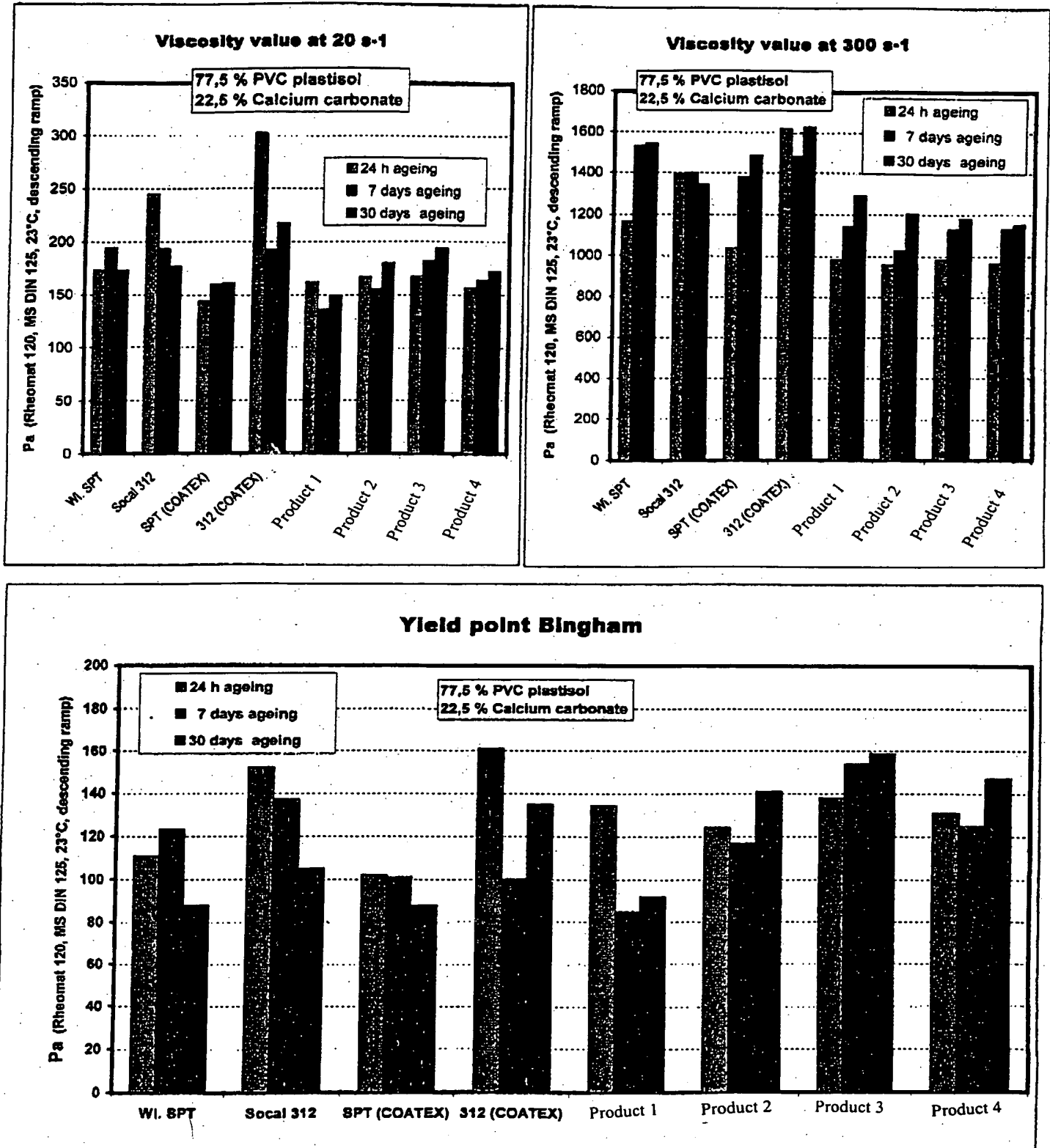


diagram 2

**CALCIUM CARBONATE PRODUCT in PVC plastisol**  
**Flow curve after 24 h ageing**

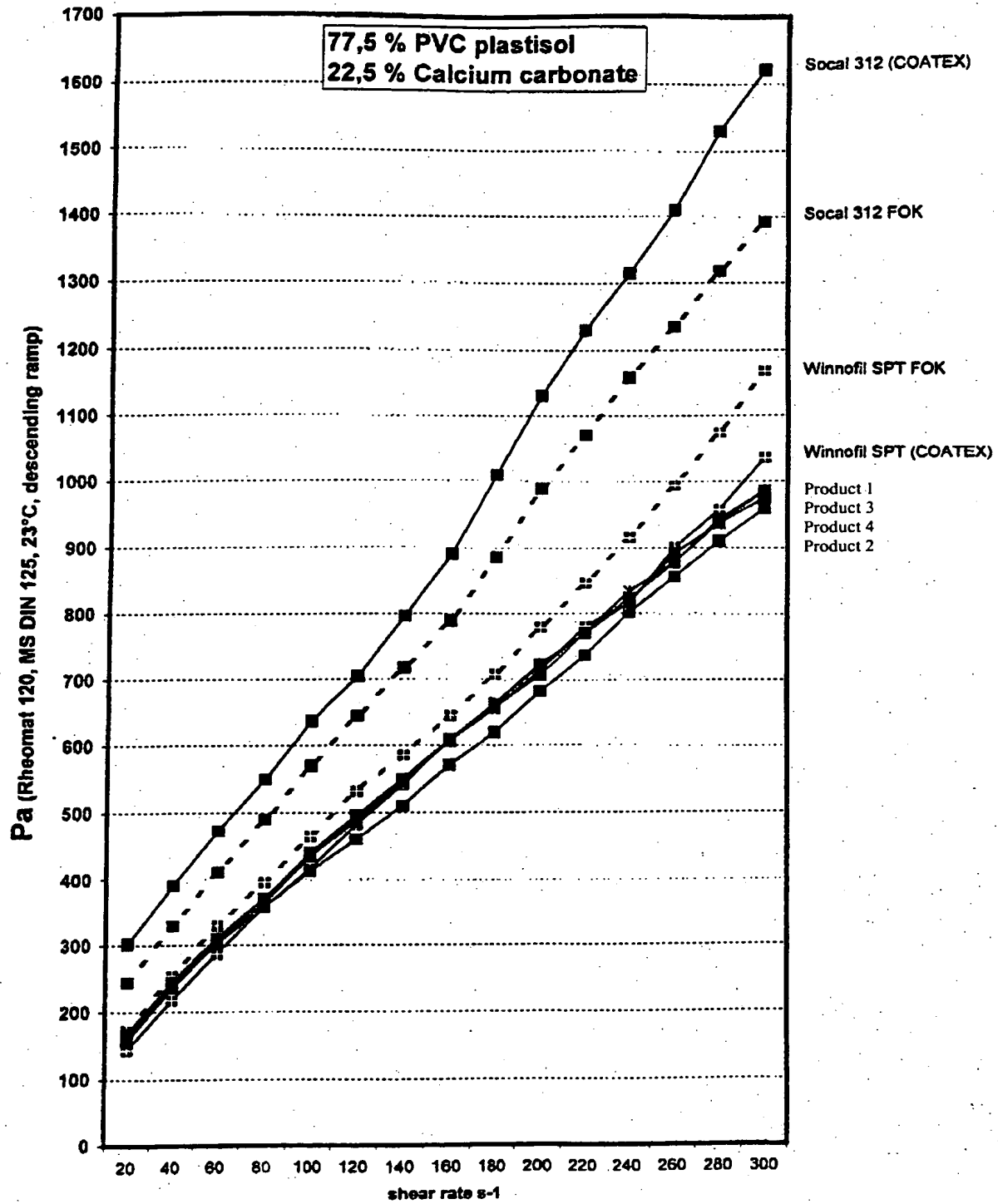


diagram 3

**CALCIUM CARBONATE PRODUCT in PVC plastisol**  
**Flow curve after 7 days ageing**

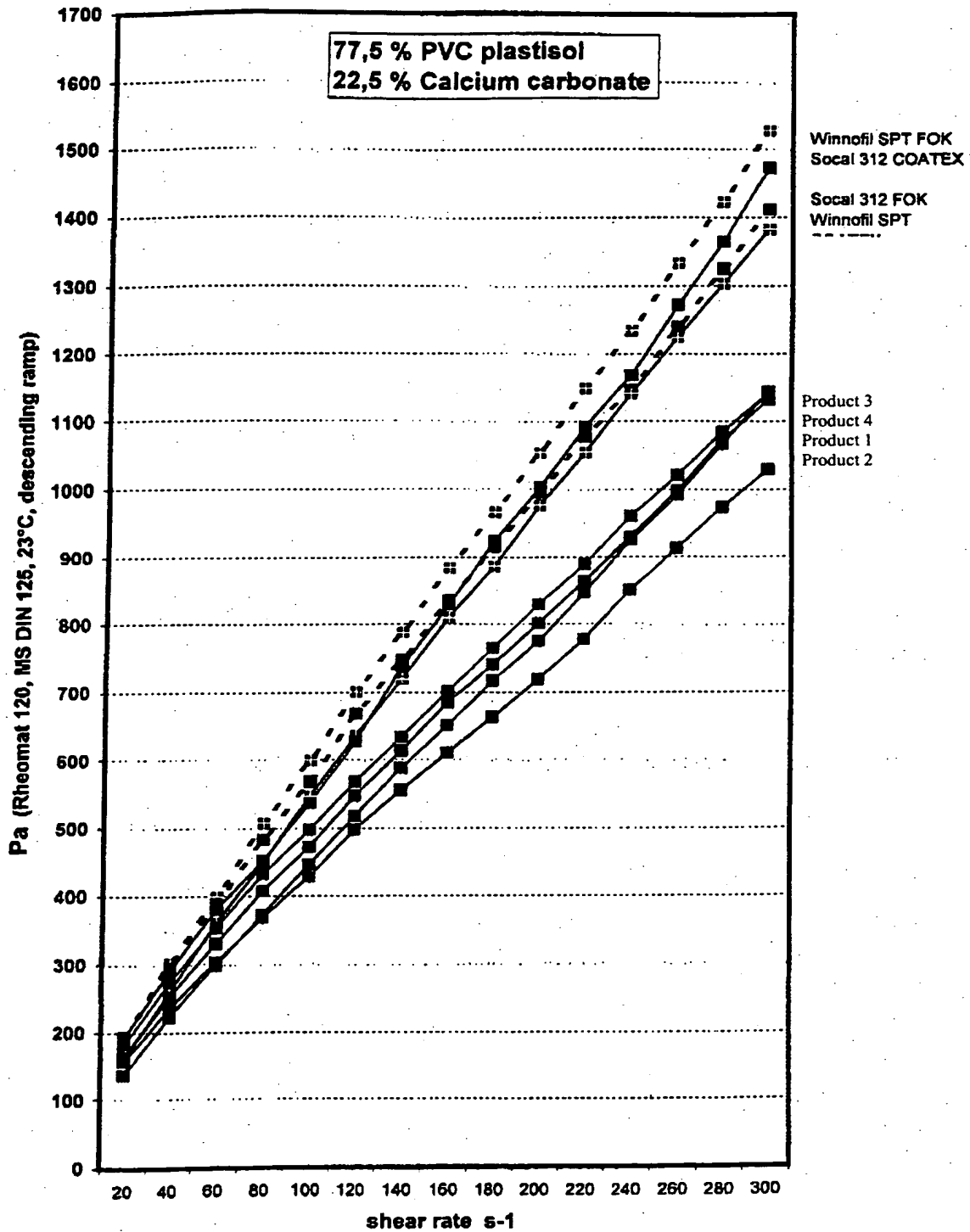




diagram 4

**CALCIUM CARBONATE PRODUCT in PVC plastisol**  
**Flow curve after 30 days ageing**

